

TAI-FLEX

Best-Selling for Reclamation Ground And Earthquake Resistant Pipeline
Ductile Cast Iron Ball-type Flexible Joint TF-80 series
achieved retaining force more than 3DkN for all sizes.

TAI-FLEX, QUALITY MADE FLEXIBLE EXPANSION JOINT

TAISEI KIKO



Introduction

TAI-FLEX is a ductile iron flexible expansion joint which was developed for the purpose of protecting pipeline from pulling out of jointed parts and/or damage which are caused by ground subsidence in reclaimed land and soft ground.

It is expected to get sufficient effect due to the available subsidence by big bending angle for pipeline in the reclaimed land where big subsidence is anticipated.

And in Japan where we have a lot of earthquake TAI-FLEX gets a good reputation as an earthquake resistant flexible joint which has the highest performances of elasticity, bending and retaining.

We recommend to you to use TAI-FLEX which prove excellent reliability and achievement as a joint for uneven subsidence in the reclaimed land and soft ground.



Non-bolt/nut and excellent strength

Our unique assembling method realized one-piece casing without any connecting by bolts and nuts. Therefore, TAI-FLEX has excellent strength and has retaining performance 3DkN (Loading corresponds to friction force between 100m pipe and soil.) for all size of products.

*D=Nominal Diameter

Compact, but sufficient bending angle and subsidence

TAI-FLEX is compact design but it can correspond to big subsidence because of sufficient bending angle. And, the structure of TAI-FLEX allows to get larger subsidence by extending sleeve, so it can correspond to large subsidence without increasing joint part.

Superior anticorrosion

Our standard coating of TAI-FLEX is synthetic resin coating externally and epoxy resin powder coating internally, so that it has excellent anticorrosion property and prevent water pollution.

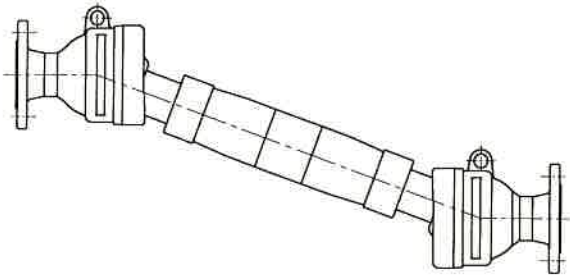
Excellent watertightness

On each bending portion and elastic portion, TAI-FLEX is provided specially designed rubber sealings. We apply rubber sealings which has excellent watertightness and high reliability and achievement so TAI-FLEX provides stable watertightness.

Correspond to torsion

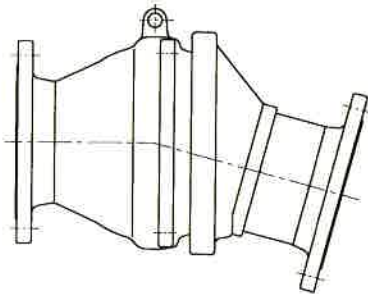
Needless to say elasticity and bending, TAI-FLEX absorbs torsion of the pipeline quickly and prevents destruction of flange and valve.

**Double Type
DN 50mm**



Item	Double type
Bending angle	±40°
Subsidence (h)	100~300mm
Elasticity	h100:100mm(+70mm -30mm) h200:220mm(+150mm -70mm) h300:400mm(+260mm -140mm)
Retaining Performance	3DkN ※D:nominal diameter(mm)

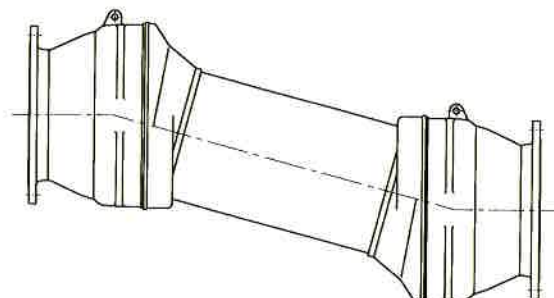
**Single Type
DN 80~300mm**



Item	DN	Double type	Single type
※1 Bending angle	80mm	±40° (±54°)	±20° (±27°)
	100mm	±38° (±52°)	±19° (±26°)
	150mm	±36° (±44°)	±18° (±22°)
	200mm	±34° (±36°)	±17° (±18°)
	250mm	±32° (±32°)	±16° (±16°)
	300mm	±30° (±32°)	±15° (±16°)
Subsidence (h)	80~300mm	100~600mm	—
Elasticity	80mm	100mm(±50mm)※2	50mm(±25mm)
	100mm	100mm(±50mm)※2	50mm(±25mm)
	150mm	160mm(±80mm)	80mm(±40mm)
	200mm	160mm(±80mm)	80mm(±40mm)
	250mm	160mm(±80mm)	80mm(±40mm)
	300mm	200mm(±100mm)	100mm(±50mm)
Retaining Performance	80~300mm	3DkN ※D:nominal diameter(mm)	

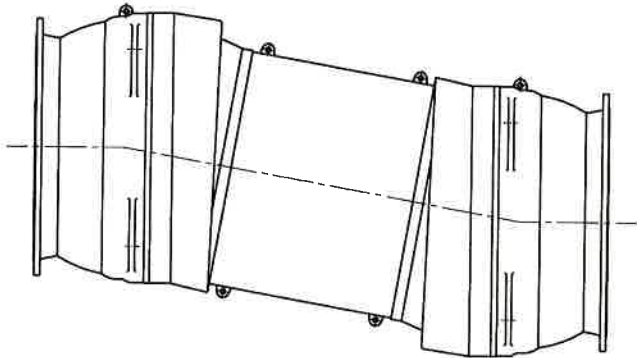
※1 Dimensions in () show bending angles at special positions.
 ※2 h=600Type:+80mm, -20mm

**Double Type
DN 80~1000mm**



Item	DN	Double type
Bending angle	350~1000mm	±30°
Subsidence (h)	350~1000mm	100~600mm (DN700mm and more:200~600mm)
Elasticity	350mm	200mm(±100mm)
	400mm	240mm(±120mm)
	450mm	240mm(±120mm)
	500mm	300mm(±150mm)
	600mm	300mm(±150mm)
	700mm	400mm(±200mm)
	800mm	400mm(±200mm)
	900mm	440mm(±220mm)
	1000mm	440mm(±220mm)
	Retaining Performance	350~1000mm

Double Type DN 1100~1800mm



Item	Double type
Bending angle	±20°
Subsidence (h)	400mm·(500mm ^{※1})
Elasticity	600mm(+350mm -250mm)
Retaining Performance	3DkN ※D:nominal diameter(mm)

※1 DN 1800mm

Performance Test

1. Horizontal watertightness test in straight and subsiding installation

Purpose: Inspecting watertightness of TAI-FLEX in horizontal, straight and subsiding installation.

Test Method: Install TAI-FLEX to test equipment at horizontally and straightly and load water pressure to TAI-FLEX in the straight and subsiding condition.

Then watch if water leak and anything wrong causes.

2. Repeating test for elasticity and subsidence

Purpose: Inspecting watertightness of TAI-FLEX under repeating elasticity and subsidence.

Test Method: Install TAI-FLEX to test equipment and repeat shrinkage, elongation and subsidence for prescribed times under water pressure.

Then watch if water leak and anything wrong causes.

3. Retaining force test

Purpose: Inspecting retaining force of TAI-FLEX.

Test Method: Install TAI-FLEX to test equipment and put tensile strength 3DkN (*) at the both ends of TAI-FLEX by hydraulic cylinder.

Then watch if TAI-FLEX breaks or anything wrong causes.

*D: nominal diameter (mm)

4. Water flow watching

Purpose: Inspecting water flow inside of TAI-FLEX.

Test Method: Use colorless acrylic TAI-FLEX Single type DN 80mm enable to watch water flow by visual inspection.

No stagnating of water was confirmed inside of TAI-FLEX at straight and bending condition.

5. Earthquake proof test

Purpose: Inspecting earthquake resistance of underground TAI-FLEX.

Test Method: Use equipment nearly reproduced discontinuous earth, for example a boundary of earth layer and conjunction part between structures.

Shaking test was conducted on condition that earthquake acceleration is over 818 gal which caused in Great Hanshin-Awaji Earthquake.

And any significant strain nor leakage was not observed.

6. Water head loss test

Purpose: Inspecting water head loss of TAI-FLEX.

Test Method: Use TAI-FLEX DN 80mm, inspected water head loss at straight and subsiding installation.

Flow Speed 0.4m/s...at straight 0.001bar, at subsiding 200mm 0.001bar

Flow Speed 0.6m/s...at straight 0.002bar, at subsiding 200mm 0.002bar

Flow Speed 1m/s...at straight 0.005bar, at subsiding 200mm 0.006bar

It is confirmed that pressure loss of TAI-FLEX is negligible.

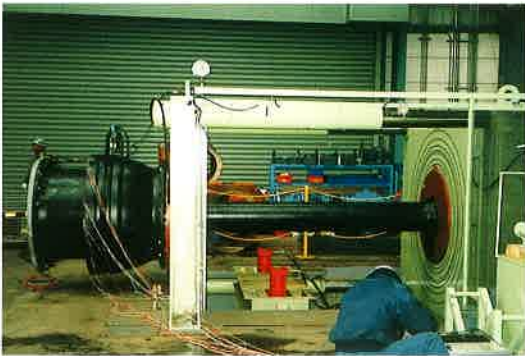
Performance Test



Inspecting watertightness of TAI-FLEX at straight and horizontally.
Watertightness test for straight and horizontally installation and repeating test for elasticity DN1200mm



Inspecting watertightness of TAI-FLEX at subsiding.
Watertightness test for subsidence and repeating test for subsidence DN1200mm



Inspecting retaining force of TAI-FLEX
Retaining force test DN900mm



Inspecting water flow inside of TAI-FLEX
Flow speed 0.08m/sec. DN80mm



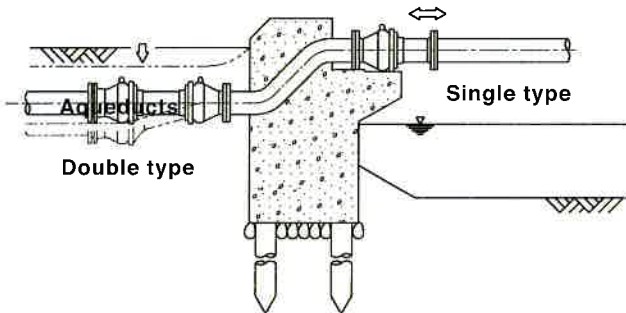
Inspecting of earthquake resistance of underground TAI-FLEX
Subsidence 200mm
DN150mm WFF-type



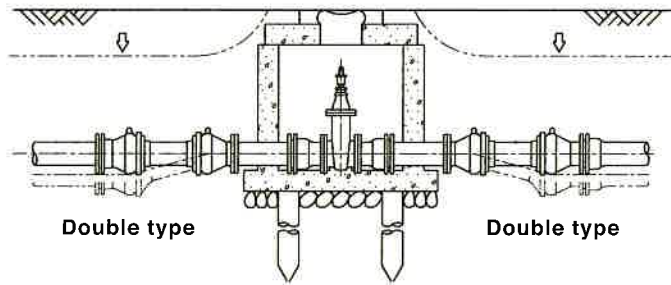
Inspecting of water head loss of TAI-FLEX at each installation condition
DN80mm WFF type Bent 27°

We protect important "Life Line" Applied widely for every possible position.

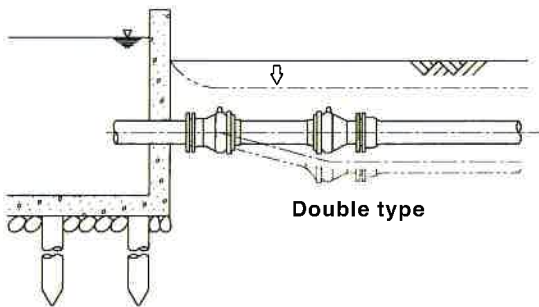
Aqueducts



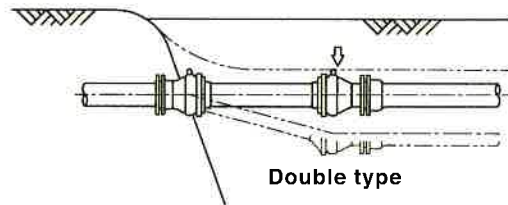
Pipe installation around a valve room



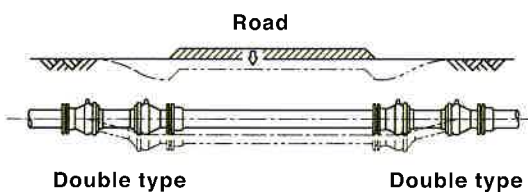
Pipe installation around a structure (Sedimentation tank, Storage tank)



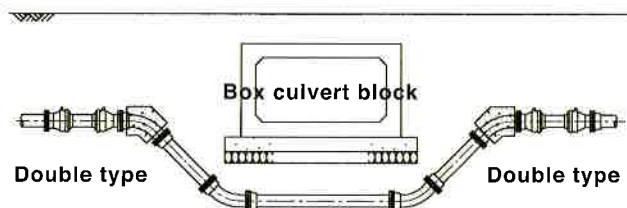
Boundary of earth layer (Boundary of earth, piled soil)



Road crossing (Uneven subsidence)



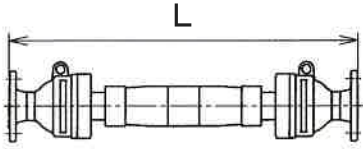
Under crossing



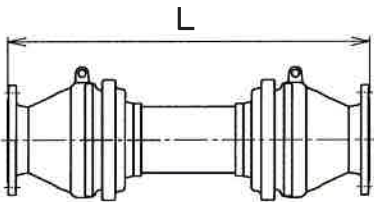
Double

BS4504 PN16

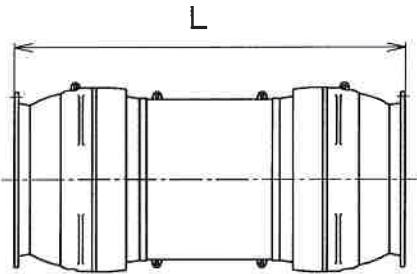
50mm



80~1000mm



1100~1800mm



(mm)

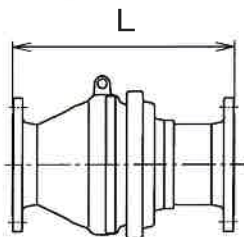
DN	Total length L			Mass (kg)		
	h=100	h=200	h=300	h=100	h=200	h=300
50	620	790	1060	20	23	28

(mm)

DN	Total length L						Mass (kg)					
	h=100	h=200	h=300	h=400	h=500	h=600	h=100	h=200	h=300	h=400	h=500	h=600
80	660	930	1210	1480	1750	2620	38	42	47	51	56	72
100	630	920	1210	1500	1790	2620	53	59	66	72	79	99
150	680	990	1300	1610	1910	2620	87	98	108	118	128	152
200	790	1120	1450	1770	2100	2730	126	144	157	171	185	211
250	830	1180	1530	1880	2230	2730	179	197	217	235	254	281
300	860	1230	1600	1970	2350	2730	256	282	307	332	357	382
350	1170	1490	1860	2240	2610	2980	360	386	418	452	481	510
400	1220	1500	1870	2250	2620	2990	487	514	550	586	622	658
450	1260	1530	1910	2280	2660	3020	598	629	672	715	757	797
500	1390	1610	2000	2380	2770	3120	781	813	868	923	978	1028
600	1530	1740	2120	2510	2890	3250	1104	1142	1213	1284	1356	1425
700		1850	2220	2590	2970	3340		1429	1513	1598	1682	1764
800		2050	2320	2700	3070	3440		2000	2075	2204	2282	2360
900		2160	2540	2930	3320	3610		2878	3006	3134	3263	3359
1000		2230	2610	3000	3390	3680		3425	3585	3727	3878	3990
1100				3190						4490		
1200				3340						5640		
1400				3440						7250		
1500				3490						8730		
1800					3890						13930	

Single

BS4504 PN16



(mm)

DN	Total length L	Mass (kg)
75	380	24
100	390	33
150	450	49
200	520	81
250	570	116
300	600	161

*Please contact us directly for an inquiry about PN10 specification products

On the Spot Installation



Hong Kong (TUNG CHUNG AREA)
DN80mm~300mm



DN700mm WUU-type
Subsidence 1000mm



Hong Kong (TSEUNG KWAN O AREA)
DN100mm WFF-type Subsidence 300mm



DN1200mm WFF-type
Subsidence 400mm



Hong Kong (TSEUNG KWAN O AREA)
DN150mm WFF-type Subsidence 300mm



DN400mm SFS-type
(Kansai International Airport)

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